

Nuclear and Particle Physics Directorate Strategic Planning Retreat Financial Summary

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70 YEARS OF
DISCOVERY

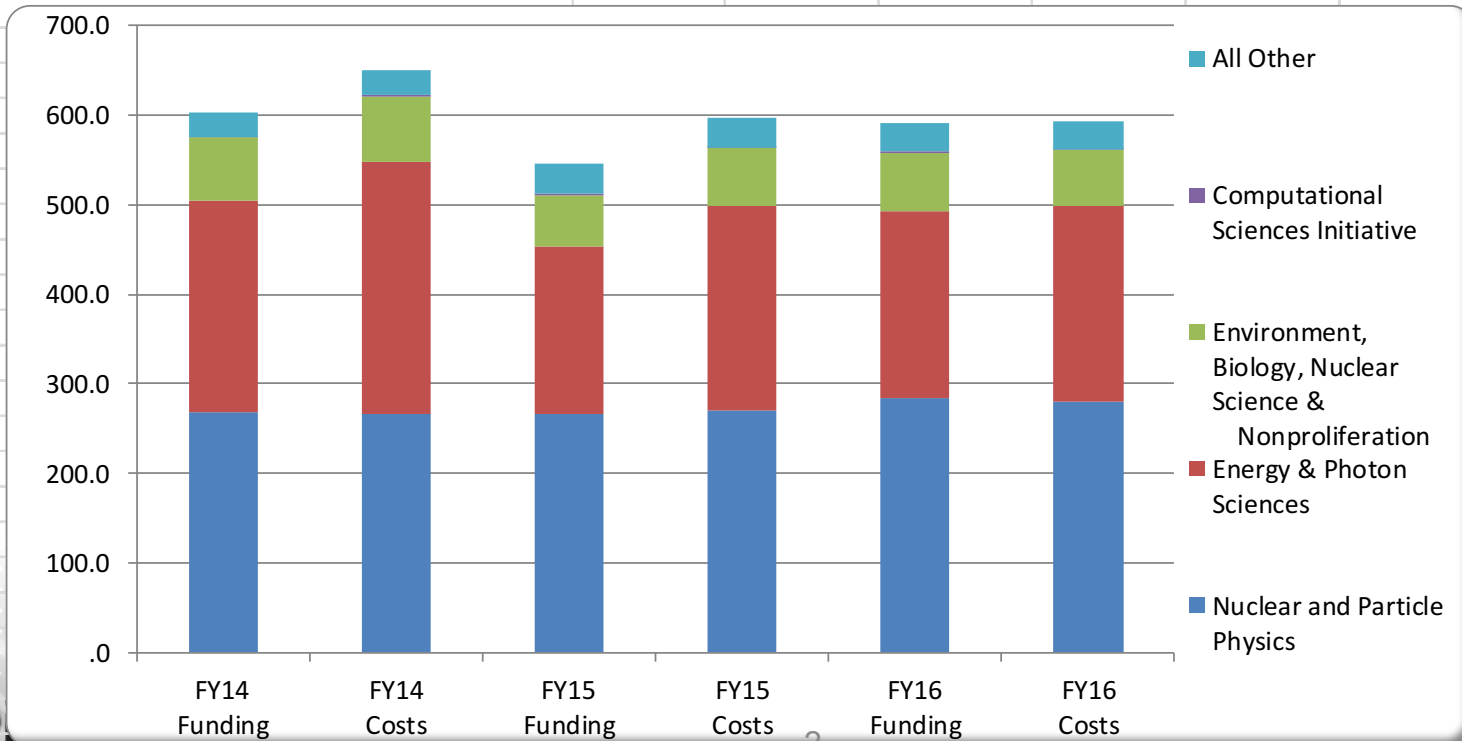
A CENTURY OF SERVICE



NPP Directorate compared to BNL

| Brookhaven National Laboratory - by Directorate | | Funding and Costs FY14 thru FY16 | | | | |
|--|--------------|----------------------------------|--------------|------------|--------------|------------|
| Programmatic | | | | | | |
| Directorate | FY14 Funding | FY14 Costs | FY15 Funding | FY15 Costs | FY16 Funding | FY16 Costs |
| Nuclear and Particle Physics | 268.0 | 266.7 | 265.6 | 270.3 | 283.7 | 279.7 |
| Energy & Photon Sciences | 236.7 | 281.4 | 188.7 | 228.6 | 210.1 | 218.5 |
| Environment, Biology, Nuclear Science & Nonproliferation | 71.0 | 73.2 | 57.0 | 64.2 | 64.3 | 62.8 |
| Computational Sciences Initiative | .5 | 1.1 | 1.5 | .9 | 2.1 | 1.0 |
| All Other | 26.7 | 27.8 | 33.6 | 34.3 | 30.8 | 31.5 |
| Total Laboratory | 603.0 | 650.2 | 546.4 | 598.3 | 591.0 | 593.5 |
| NPP % of Laboratory Total | | 44.5% | 41.0% | 48.6% | 45.2% | 48.0% |
| | | | | | | 47.1% |

FY17
trending
to over
50%



NPP Directorate Funding Summary FY2014-FY2017

| Program | FY2014 | FY2015 | FY2016 | FY2017 |
|-----------------------------|---------|---------|---------|---------|
| Nuclear Physics | 180,753 | 186,378 | 191,000 | 188,136 |
| Nuclear Physics - Cap | 4,895 | (859) | 2,989 | 3,744 |
| Nuclear Physics - Const | 4,976 | 1,813 | 3,621 | 2,369 |
| Total Nuclear Physics | 190,624 | 187,332 | 197,610 | 194,249 |
| % of Total Funding | 68.0% | 67.2% | 66.0% | 63.9% |
| High Energy Physics | 54,337 | 53,278 | 49,964 | 52,919 |
| High Energy Physics - Cap | 3,761 | 7,321 | 14,632 | 11,506 |
| High Energy Physics - Const | 4,900 | 3,400 | 9,380 | 9,634 |
| Total High Energy Physics | 62,998 | 63,999 | 73,976 | 74,059 |
| % of Total Funding | 22.5% | 22.9% | 24.7% | 24.3% |
| Other DOE Programs | 525 | 369 | 973 | 526 |
| Work For Others | 12,258 | 12,600 | 9,836 | 18,533 |
| Intra-Lab | 1,356 | 1,049 | 1,067 | 1,479 |
| Indirect Pool | 12,764 | 13,556 | 16,113 | 15,336 |
| Total | 280,525 | 278,906 | 299,575 | 304,181 |

NP – Includes RHIC, Experiments, Research and Isotope work. FY16 increase in Accelerator Operations (\$5M) & MIRP Production Funds (\$3.6M)

HEP – increase in Projects (ATLAS and DUNE)

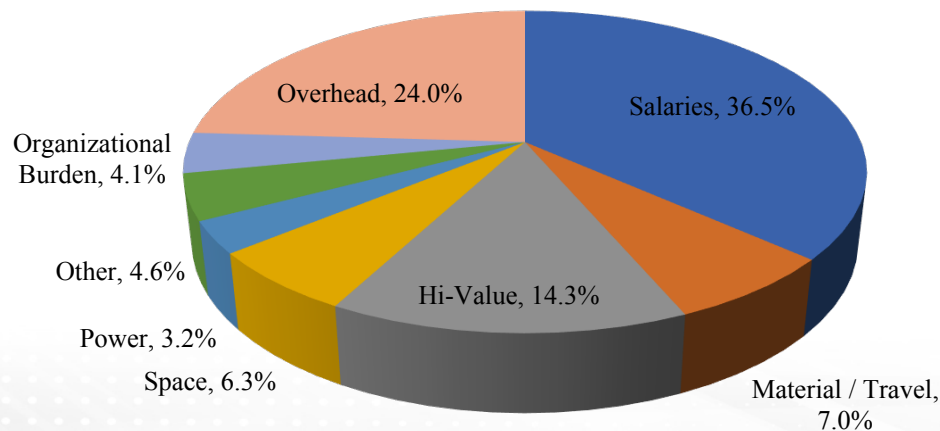
WFO – mostly NSRL and RIKEN with FY17 increase due to NYSERDA

NPP Directorate Cost Summary FY2014-FY2017

| Cost Type | FY2014 | FY2015 | FY2016 | FY2017 Proj. |
|-----------------------|--------|--------|--------|--------------|
| Salaries | 103.9 | 107.0 | 110.7 | 109.9 |
| Material / Travel | 22.2 | 21.7 | 22.8 | 21.0 |
| Hi-Value | 35.5 | 36.6 | 44.0 | 43.0 |
| Space | 18.5 | 19.3 | 18.9 | 18.9 |
| Power | 10.1 | 8.8 | 6.7 | 9.6 |
| Other | 11.8 | 12.0 | 11.4 | 13.8 |
| Organizational Burden | 11.7 | 12.5 | 12.3 | 12.2 |
| Overhead | 65.4 | 66.5 | 68.4 | 72.3 |
| Total | 279.2 | 284.4 | 295.2 | 300.6 |

Fixed Costs 70.9%

NPP Directorate - FY17 Projected



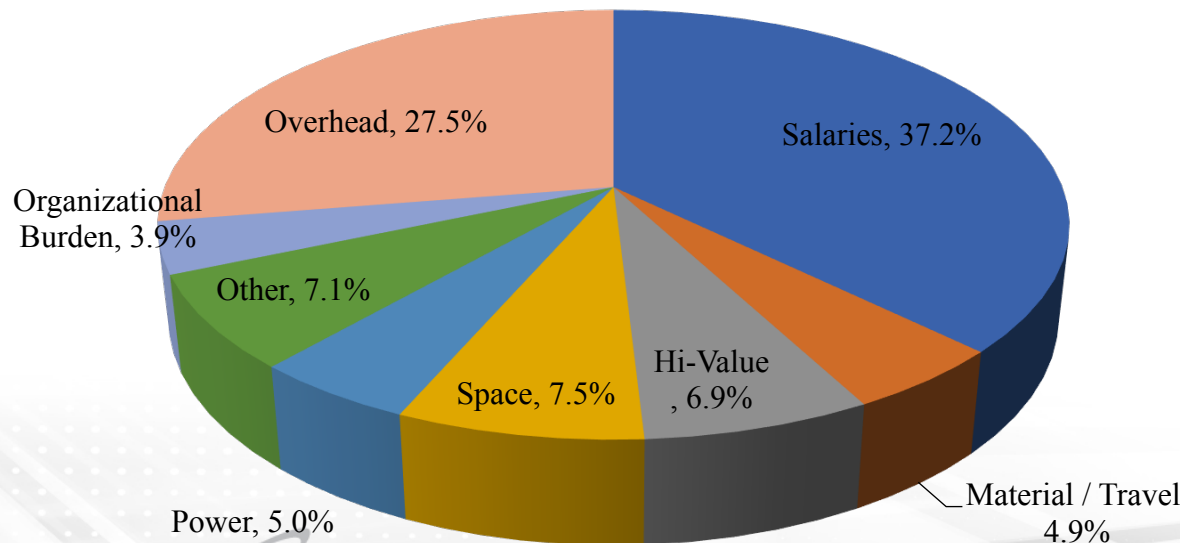
Collider-Accelerator Summary

| Cost Type | FY2014 | FY2015 | FY2016 | FY2017 Proj. |
|-----------------------|---------|---------|---------|--------------|
| Salaries | 58,307 | 61,697 | 63,848 | 64,442 |
| Material / Travel | 12,199 | 12,166 | 12,141 | 8,538 |
| Hi-Value | 9,168 | 11,354 | 13,968 | 11,955 |
| Space | 12,911 | 13,154 | 13,200 | 12,894 |
| Power | 8,946 | 7,850 | 6,008 | 8,578 |
| Other | 10,456 | 10,648 | 10,341 | 12,233 |
| Organizational Burden | 5,691 | 6,146 | 6,364 | 6,714 |
| Overhead | 42,407 | 44,288 | 44,891 | 47,663 |
| Total | 160,085 | 167,303 | 170,761 | 173,016 |

Fixed Costs 76.1%

Supports ~430 fte's
Additional fte's supported
via trade labor

Collider Accelerator FY2017 Projected



Magnet Summary

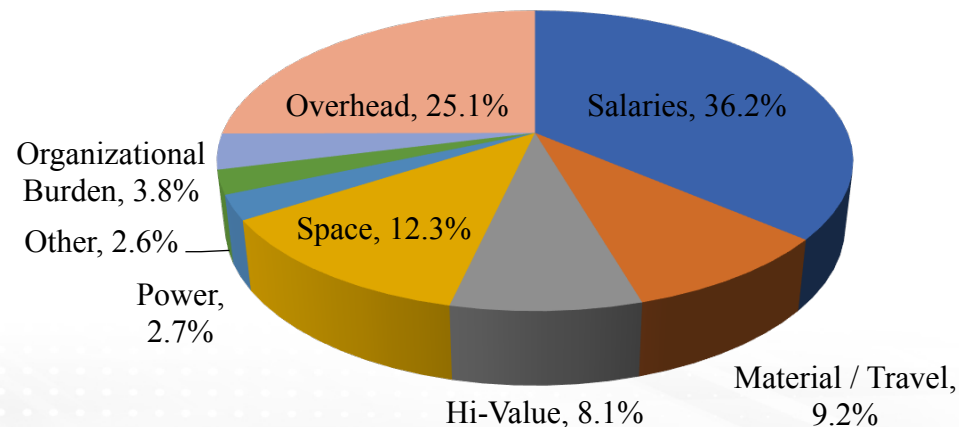
| Cost Type | FY2014 | FY2015 | FY2016 | FY2017 Proj. |
|-----------------------|--------|--------|--------|--------------|
| Salaries | 2,854 | 2,299 | 2,737 | 3,238 |
| Material / Travel | 473 | 586 | 652 | 826 |
| Hi-Value | 133 | 337 | 332 | 728 |
| Space | 1,023 | 1,149 | 1,068 | 1,098 |
| Power | 119 | 88 | 97 | 237 |
| Other | 217 | 254 | 158 | 230 |
| Organizational Burden | 336 | 325 | 363 | 342 |
| Overhead | 1,993 | 1,594 | 1,816 | 2,242 |
| Total | 7,148 | 6,632 | 7,223 | 8,940 |

Fixed Costs 77.4%

Supports ~20 fte's, another
~10 fte's to other departments

Significant infrastructure
needs

Magnet FY2017 Projected



Instrumentation Summary

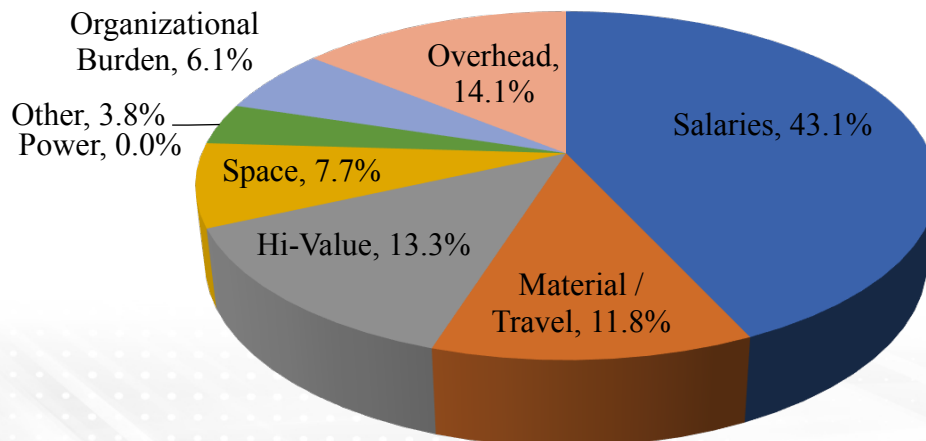
| Cost Type | FY2014 | FY2015 | FY2016 | FY2017 Proj. |
|-----------------------|--------|--------|--------|--------------|
| Salaries | 6,630 | 6,451 | 6,261 | 5,617 |
| Material / Travel | 1,433 | 1,554 | 2,262 | 1,539 |
| Hi-Value | 1,321 | 1,267 | 1,587 | 1,736 |
| Space | 1,163 | 1,186 | 980 | 1,009 |
| Power | 0 | 0 | 0 | 0 |
| Other | 318 | 373 | 348 | 499 |
| Organizational Burden | 708 | 846 | 825 | 790 |
| Overhead | 810 | 968 | 1,732 | 1,844 |
| Total | 12,383 | 12,645 | 13,995 | 13,034 |

Fixed Costs 71.0%

Supports ~34 fte's
LSST FY17 material \$1.7M

LSST Salary of \$1.2M includes
\$.56M of permanent staff

Instrumentation FY2017 Projected ASIC / Design Tool Maintenance
contracts \$.9M



Physics Summary

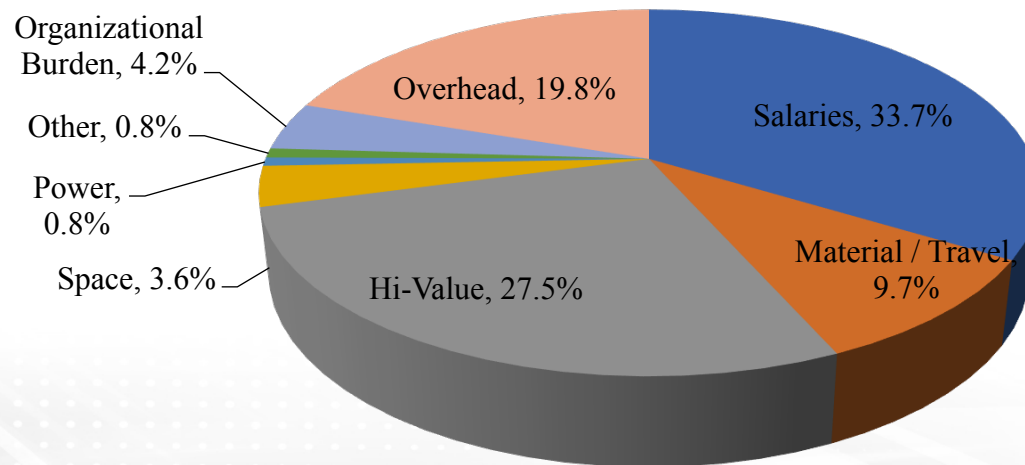
| Cost Type | FY2014 | FY2015 | FY2016 | FY2017 Proj. |
|-----------------------|--------|--------|---------|--------------|
| Salaries | 33,917 | 34,541 | 35,832 | 34,228 |
| Material / Travel | 7,734 | 7,084 | 7,449 | 9,818 |
| Hi-Value | 24,892 | 23,609 | 27,984 | 27,941 |
| Space | 3,384 | 3,692 | 3,519 | 3,618 |
| Power | 1,007 | 827 | 603 | 764 |
| Other | 773 | 733 | 511 | 837 |
| Organizational Burden | 4,970 | 5,113 | 4,643 | 4,306 |
| Overhead | 19,850 | 19,361 | 19,612 | 20,144 |
| Total | 96,527 | 94,960 | 100,153 | 101,655 |

Fixed Costs 61.3%

Supports ~240 fte's

If pass thru added (\$20.6M)
fixed % increases to 81.5%

Physics FY2017 Projected



Summary

- NPP Directorate has strong programmatic support and we expect that to continue. DOE funding has been relatively stable.
- Very little discretionary funds - in all areas supporting individuals is the majority of costs
- Program offices emphasized the President's Budget Request is the first step of a process. We have been advised to continue business as usual and delay the implement of irreversible decisions for as long as possible.
- As we head towards uncertainty in FY2018 we need to continue maintain flexibility along with providing meaningful science.

BACKUP SLIDES

HEP President Budget Impact

| SUMMARY by B&R: | | FY 2017 Enacted Approp | FY 2018 Pres Request Realloc |
|----------------------------------|-----------|------------------------------|---------------------------------------|
| Energy Res | KA210102 | 4,950 | |
| ATLAS OPS | KA2102021 | 22,814 | 19,350 |
| Harrison Detailee | KA210209 | 180 | |
| Intensity Res | KA220102 | 4,320 | |
| Intensity OPS | KA220201 | 975 | |
| Waste | KA220209 | 385 | |
| Cosmic | KA230102 | 1,300 | |
| Theory | KA2401012 | 3,600 | |
| Sceintific Computing Research | KA2401022 | 152 | |
| Lattice QCD | KA2403013 | 1,130 | |
| LHC Accelerator Research Program | KA2501012 | 125 | |
| Accel R&D LARP | KA2501021 | 4,300 | |
| Muon | KA2501022 | 250 | |
| Generic Detector | KA2501032 | 1,100 | |
| ATF | KA260102 | 615 | |
| To be allocated | \$17,340 | | 14,740 |
| ATF Upgrade | KA260201 | 1,163 | - |
| ATF Operations | KA260201 | 3,990 | 3,350 |
| DUNE Project | KA | 7,850 | 3,000 |
| HL-LHC | KA2103011 | 8,500 | 6,000 |
| ATLAS I | KA2103011 | 3,452 | |
| LSST (Funds to come from SLAC) | KA2303011 | 3,000 | - |
| Total | | 74,151 | 46,440 |

NP President Budget Impact

| SUMMARY by B&R: | | FY 2017 Enacted Approp | FY 2018 Pres Request Realloc |
|-----------------------------|---------------------|------------------------------|---------------------------------------|
| ME Research | KB-01-01-02 OPE | 2,289 | 1,100 |
| HI Research | KB-02-01-02-1 OPE | 6,564 | 4,436 |
| HI Research (Ruan- ECA) | KB-02-01-02-1 OPE | 500 | - |
| HI Research (Open Science) | KB-02-01-02-2 OPE | 25 | 30 |
| RHIC Accel OPE | KB-02-02-01-1 OPE | 131,179 | 131,545 |
| RHIC Accel R&D | KB-02-02-01-1 OPE | 1,288 | - |
| RHIC Accel CE | KB-02-02-01-1 EQU | 1,094 | 200 |
| RHIC Accel AIP | KB-02-02-01-1 AIP | 2,369 | - |
| RHIC Exp Sup Ops | KB-02-02-01-2 OPE | 35,958 | 32,993 |
| RHIC Exp Sup CE | KB-02-02-01-2 EQU | 2,650 | - |
| TH Research | KB-03-01-02 OPE | 2,650 | 2,201 |
| TH Research (Schenke-ECA) | KB-03-01-02 OPE | 500 | 500 |
| Theory Collaboration - TMD | KB-03-01-02 OPE | 440 | 450 |
| Theory Collaboration - BEST | KB-03-01-02 OPE | 455 | 465 |
| TH Research LQCD | KB-03-01-02 EQU | 80 | - |
| SciDAC | KB-03-01-05-2 OPE | - | - |
| ND Research | KB-03-01-04-2 OPE | 3,990 | 3,212 |
| LE Research | KB-04-01-02-2 OPE | 839 | 528 |
| BLIP Research | ST-50-01-02/-03 OPE | 739 | 558 |
| BLIP Operations | ST-60-01-02 OPE | 586 | 600 |
| BNL Hot Cells Operations | ST-60-01-03 OPE | 3,028 | 2,521 |
| Total | | 197,223 | 181,339 |